

# **FREQUENCY-DEPENDENT PHASE PRE-DISTORTION FOR REDUCING SPURIOUS EMISSIONS IN COMMUNICATION NETWORKS**

## **ABSTRACT OF THE DISCLOSURE**

5 A frequency-dependent phase pre-distortion technique is applied to an input signal in order to reduce spurious emissions resulting from subsequent amplification of the signal. In preferred embodiments, the frequency-dependent phase pre-distortion of the present invention is implemented in combination with the (frequency-independent) magnitude and phase pre-distortion technique described in U.S. Patent Application No. 09/395,490 ("the '490 application"), where one or more frequency-  
10 dependent phase pre-distortion signals are either advanced or delayed relative to the main pre-distorted signal generated in accordance with the '490 application. Each frequency-dependent phase pre-distortion signal is preferably based on a  $180^\circ$  phase difference between a pair of (critical) frequencies located outside (e.g., one on each side) of the signal channel. The magnitude of the frequency difference between the pair of critical frequencies dictates the magnitude of the desired advancement or delay in  
15 time of the frequency-dependent pre-distortion signal relative to the main pre-distorted signal. Embodiments of the present invention may be implemented in either the baseband domain or the RF domain. Implementations may also be based on look-up tables that are adaptively updated to ensure optimal performance over time.